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making **better communities** by linking land use and transportation

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April, 1997

Changing the way we design our communities can substantially reduce travel demand on roadways and increase transportation choices for all Bay Area residents. Fortunately, effective strategies are available to help us retrofit existing communities and build new neighborhoods in ways that foster walking, bicycling and transit use.

This guidebook demonstrates how local leaders can encourage more transit-oriented, pedestrian- and bicycle-friendly neighborhoods and communities. The recommendations correspond to the full range of land-use and related activities under local government control: general plans, zoning and subdivision regulations, development review, capital improvement programs and coordinated planning with other jurisdictions.

Of course, each locality is different. Local leaders must decide on the appropriate mix of strategies and actions to suit their community's unique character and needs. This guidebook recognizes the diverse nature of Bay Area communities and provides a broad range of choices to consider.

Gary Binger
Deputy Executive Director/Planning Director

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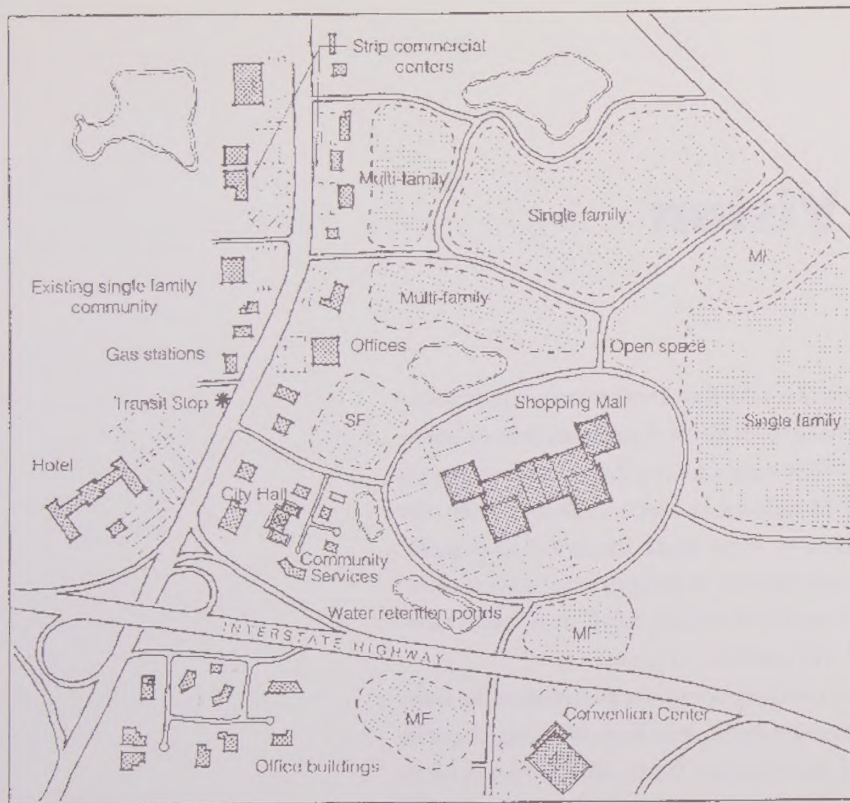
A New Urban Vision

Americans are becoming increasingly aware that the development approach we have followed for the last 50 years has a number of undesirable consequences. On the one hand, governments are finding it harder to provide safe, efficient transportation services. On the other, the negative environmental effects of America's increasing auto dependence, as well as a new awareness of how the ways we develop make it difficult to give all citizens real accessibility have brought more focus onto how we build our communities.

Obstacles to Meeting the Transportation Challenge

Local, state and national governments have long been responsible for providing adequate roads and streets. For a number of reasons, however, governments are finding it harder and harder to fulfill this responsibility.

- **Demand on the Bay Area's transportation system has grown faster than either jobs or housing.** While the number of households increased only 14 percent between 1980 and 1990, the number of trips made increased 22 percent. Though the rate of growth is forecast to slow, the number of vehicle trips and miles traveled will continue to grow.
- **More complex commute patterns make solutions more difficult to find.** Housing and jobs have moved away from older urban centers. This decentralization, which has resulted in more commuting among suburbs and relatively less to older job centers, makes it harder to find coherent transportation solutions.
- **Congestion is increasing.** Currently, over 212 of the 812 miles of freeway in the Bay Area are congested during peak travel times. This number is forecast to double over the next 12 years. Not only has the number of congested freeway segments increased; the length of congested periods has grown as well.



The typical suburban center results in auto-oriented development, segregated land uses and a pattern of development that is inefficient for transit to serve.

Source: Snohomish County Transportation Authority. "Creating Transportation Choices Through Zoning" Volume II

- **Transportation funding has not kept pace with demand.** The ability to increase roadway capacity has shrunk. In the Metropolitan Transportation Commission's *Regional Transportation Plan*, most funding is committed to operating, maintaining, and managing the existing transportation system; only five percent is available for new uses, including transit and highway expansion.
- **New roadways are less successful in reducing congestion.** When freeways were first built,

they increased mobility (at least for those with cars). Now roadway improvements often encourage more driving, which soon brings congestion back to pre-project levels.

- **Environmental concerns make expanding existing roads or building new ones difficult or impossible.** More cars have meant more noise, air and water pollution. While sound walls have mitigated noise impacts on freeways, and cleaner vehicles have improved some aspects of air quality, noise levels on other roads and pollution from particulate matter continue to worsen.

Using Land Use to Help Shape a New Transportation System

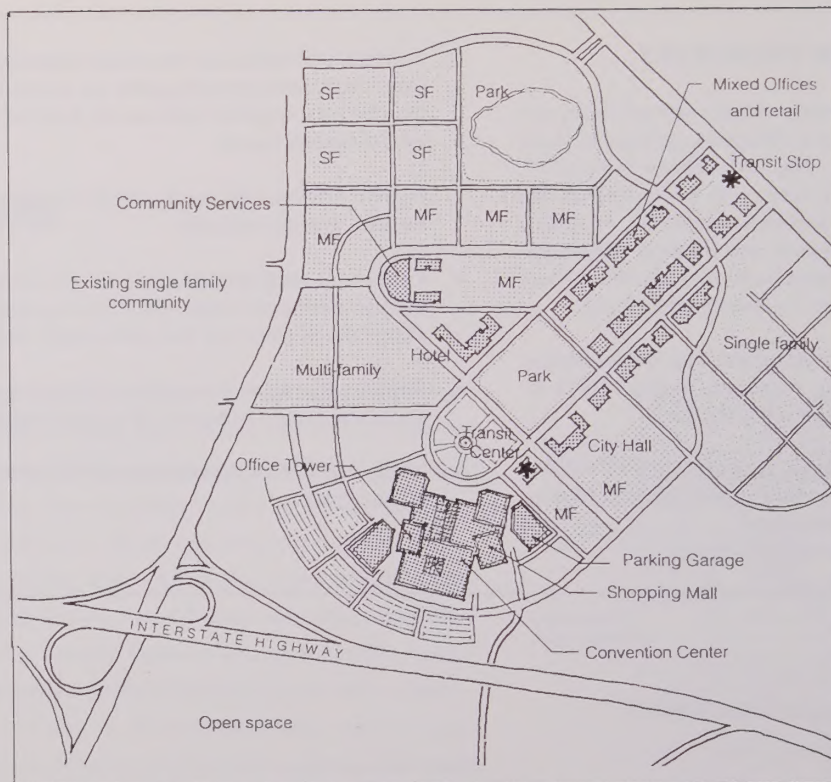
With the phenomenal expansion of urban areas after World War II, fueled partly by the growing use of the private automobile, we began to see the environmental consequences of growth: loss of farms and open space; more noise, air and water pollution; reduced sense of community life; a shrinking bay; and loss of plant and animal species. Governments began to take a more critical look at how development affects the environment—and their roads and traffic levels—often requiring less intense projects or denying them altogether.

Curbing the rate of growth and intensity of development in one place, however, has often shifted growth to other areas, increasing overall demands on a region's circulation system as well as encouraging further urban sprawl.

A New Vision

In response to these challenges, many professionals have proposed a variety of alternative designs to more effectively reduce urban sprawl, make more efficient use of transportation and infrastructure systems, and enhance the livability of our communities. These visions have gone by different names: new urbanism, transit-oriented development, traditional neighborhood development. Whatever the name, they share the common goal of making communities more environmentally sound and accessible within the financial, physical and environmental limits facing us today.

How to apply this vision will differ. Elected officials and planners should tailor programs to the character and context of their communities. The goal is to develop a comprehensive strategy that includes a range of mutually supportive actions. That together will have a greater impact than each action working separately.



A new model urban center, built on community-oriented planning, results in integrated land uses and a pattern of development that is efficient for transit to serve.

Source: Snohomish County Transportation Authority.
"Creating Transportation Choices Through Zoning" Volume II

THE AHWAHNEE PRINCIPLES

One of the best statements of these new principles was developed by a number of designers, activists and local government officials. The "Ahwahnee Principles", named because they were first presented at the Ahwahnee Hotel in Yosemite National Park, establish a set of community, regional and implementation approaches for creating more livable communities. These principles call for leaders to, among other things:

- Plan for complete communities that integrate housing, jobs, shopping, recreation, and civic uses essential to the daily life of residents.
- Size and arrange communities so that jobs, housing and other uses are within walking distance of transit stops and of each other.
- Create a well-connected circulation system that provides direct and interesting paths for pedestrians and bicyclists and organize land uses so that they can be well-served by transit.
- Provide a community center and an ample supply of squares, greens and parks.
- Establish a well-defined edge for the community through permanent open space and incorporate existing natural areas into the community's design.
- Organize the regional network of urban places around a regional system of transit rather than freeways.
- Locate regional institutions and services within major urban centers.
- Take charge of planning these communities to avoid piecemeal development and encourage infill and re-development.

Overall, these principles are designed to help communities become more livable and environmentally sustainable.

Strategies

The Five Basic Strategies

The actions localities can take to achieve this new vision of more livable and accessible communities can be grouped into five basic strategies:

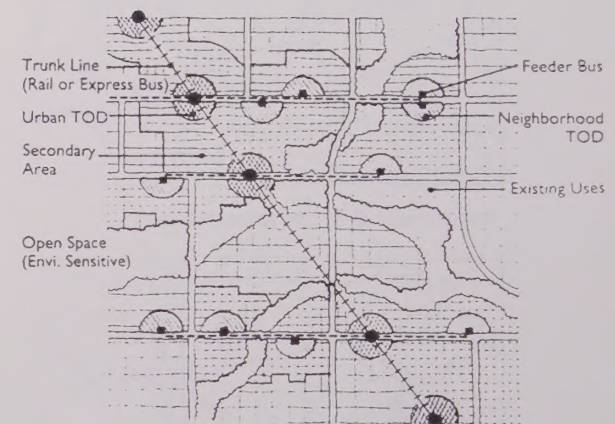
- 1 Compact and balanced communities
- 2 A greater mix and intensity of land uses
- 3 An integrated transportation network
- 4 Pedestrian-friendly development standards
- 5 Incentives to reduce driving

Cities and counties can establish **compact and balanced communities** through a pattern of development and open space that limits the size of urbanized areas and organizes land uses to work closely with a more transit-oriented transportation system. Balance entails a closer match between jobs located within the community and housing that meets the needs and income of the workers that will fill those jobs. Additionally, balanced communities contain more of the shopping, services, civic, and recreational uses that residents and workers

demand so that trips can be kept short. By organizing those uses into transit corridors, activity centers and defined, compact neighborhoods, and directing auto-dependent uses to more auto-oriented districts, cities can encourage more walking, bicycling and transit use. Communities can also incorporate natural areas into the urban fabric, using natural features and major traffic corridors to better define neighborhoods and centers.

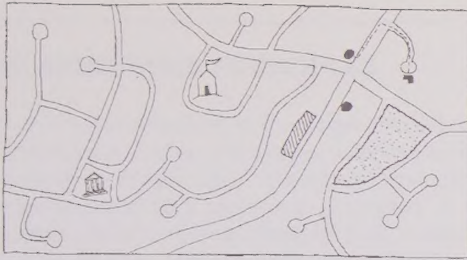
Especially in downtowns, near transit stops and within other activity centers, a **greater mix and intensity of land uses** brings people closer to work, shopping, school, and entertainment, making it easier to walk and bicycle to those destinations.

With an **integrated transportation network** that emphasizes walking, bicycling and transit use as much or more than the private automobile, communities can begin to provide real alternatives to the continued rapid growth in automobile use, improve the quality of their neighborhoods, and support their existing downtowns. Including walking, bicycling and transit facilities in the design and redesign of the circulation system can maximize



Land use planning should direct activity centers to where they can be served by transit.

Source: Peter Calthorpe



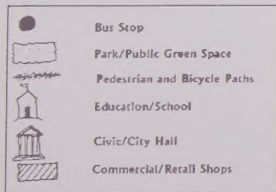
Typical cul-de-sac unintegrated street pattern



Retrofitted cul-de-sac street pattern



Integrated grid street pattern



accessibility for all users.

Pedestrian- and transit-friendly development standards that lead to a more pleasant environment are essential for reclaiming the street as public, civic space. These standards include orienting buildings to pedestrian areas (both to sidewalks and within parking lots), providing an interesting pedestrian environment, limiting the number of driveways, and planting street trees.

Programs that provide incentives to reduce driving support the other strategies by encouraging drivers to get out of their cars and use other means to reach their destinations. Automobiles are heavily subsidized—one study estimates that gas taxes would need to be increased \$1.80 per gallon to offset these subsidies. Programs which address automobile subsidies are key actions in this category. Measures that encourage people to walk, bicycle and use transit are also essential aids.

Individually, these strategies will help reduce reliance on—and environmental impacts of—the private automobile. They have even greater impacts when they are used together. Pedestrian-friendly design standards, for example, will support a greater mix of uses by creating an attractive environment that encourages walking between those uses. Likewise, limiting urban sprawl can encourage the redevelopment and intensification of mixed-use activity centers.

Supporting Actions

Many approaches are available to carry out these strategies, and some of them apply to more than one strategy. They become more effective when combined into a balanced, coordinated program tailored to local conditions.

The following table lists many of the key actions that local governments can take.

Compact and Balanced Communities

- ◆ Establish urban growth boundaries around existing communities
- ◆ Encourage the development of housing targeted to the incomes and needs of workers within the community
- ◆ Identify transit corridors and activity centers and separate auto-dependent uses from them
- ◆ Require specific plans to ensure coordinated planning for the development of activity centers

Greater Mix And Intensity Of Land Uses

- ◆ Increase the density of housing and employment especially in activity centers
- ◆ Increase the mix of uses within communities:
 - Allow a broader range of uses within zoning districts
 - Encourage more on-site services (day care, dry cleaning, cafes, health clubs) within employment centers and office parks
- ◆ Add housing within walking distance of employment areas
- ◆ Encourage infill and intensification:
 - second units
 - sale of air rights over public lands
 - redevelopment of vacant or underutilized lands
- ◆ Direct civic uses and create public spaces in community activity centers
- ◆ Discourage auto-oriented uses in pedestrian- and transit-oriented areas

Integrated Transportation Network

- ◆ Plan and implement a dense, interconnected network of streets and pathways:
 - connect key core sites
 - have short, regularly-shaped blocks and frequent intersections
 - limit the use of cul-de-sacs
 - provide direct bus access to potential riders and key sites
- ◆ Keep vehicle speeds low and improve safety:
 - traffic calming techniques
 - narrow vehicle ways
 - reduced turning radii
 - reduced "optical width" of streets
 - reduced intersection widths
 - more frequent, well-marked mid-block crossings
 - wider, frequent sidewalks
 - wider inside lanes for bicyclists
 - eliminate "free right turn" lanes where pedestrian use is high

STRATEGY

AVAILABLE ACTIONS

Integrated Transportation Network (cont'd)

- ✱ Provide a dense pedestrian network:
 - include mid-block passageways where blocks are long
 - provide shortcuts and alternative routes to walking along high-volume roadways
 - require clearly marked pedestrian paths through parking areas directly to building entrances
- ◆ Establish transit routes that serve and link activity centers, with priority for transit vehicles, direct routing, and few turns
- ◆ Limit freeway expansion, particularly where expansion would compete with regional transit corridors

Pedestrian-Friendly Development Standards

- ◆ Orient buildings and entrances to the pedestrian network:
 - Encourage visually interesting building facades—windows, building articulation and interesting materials—instead of blank walls
 - Encourage frequent building entrances
 - Encourage front porches
 - Reduce setbacks for both commercial and residential buildings
- ◆ Locate parking areas to the rear or, if screened, to the side of buildings
- ◆ Coordinate and connect adjoining parking areas
- ◆ Limit driveways crossing pedestrian paths
- ◆ Locate residential garages to rear or side of lot
- ◆ Provide pedestrian amenities (benches, awnings in commercial areas, appropriately scaled signs, kiosks)
- ◆ Provide street trees along roadways and to help mark pedestrian paths through parking lots
- ◆ Use on-street parking to help separate pedestrians from moving vehicles
- ◆ Provide adequate lighting and visual surveillance

Incentives to Reduce Driving

- ◆ Limit the amount of parking allowed; encourage shared parking
- ◆ Reduce parking subsidies through parking cash-out programs and increase parking fees
- ◆ Allow bicycles on buses and rail transit
- ◆ Require bicycle-friendly facilities (bike parking, on-site showers)
- ◆ Include bicycle and pedestrian facilities in street design and reconstruction
- ◆ Establish shuttles to connect employment and shopping areas to fixed-rail transit stations
- ✱ Assign local staff to manage programs that promote walking, bicycling and transit use city-wide
- ◆ Conduct public outreach or awareness programs to encourage the greater use of alternative travel modes, and involve citizens in applying new development principles








Changing Local Plans and Programs

Cities and counties have the authority and tools to improve the link between land use and transportation. The policies and programs they develop and implement can be organized into five categories:

- 1 general plans
- 2 development regulations
- 3 development review
- 4 capital improvements and other actions
- 5 subregional cooperation

GENERAL PLANS AND OTHER LOCAL POLICIES

LAND USES

-  Employment
-  Regional Shopping
-  Auto-Oriented Commercial
-  Industrial
-  Mixed-Use Center
-  Pedestrian Neighborhood
-  Other Residential

TRANSPORTATION FACILITIES

-  Freeway
-  Arterial Street
-  Transit Street
-  Collector Street
-  Transit Station
-  Transit Stop

Cities and counties use general plans to articulate the basic policy framework for the future development of their communities. The following additions can establish the foundation needed to better integrate land use and transportation and build more livable communities.

The Land Use Diagram should identify transit routes and direct more intense land uses around them



OVERALL FRAMEWORK

The General Plan Diagram, which identifies the future pattern of uses and public facilities within the community, provides the overall framework for cities and counties to better integrate land use and transportation.

- 1 ESTABLISH A LAND USE PATTERN THAT IDENTIFIES ACTIVITY CENTERS, NEIGHBORHOODS AND TRANSIT CORRIDORS, AND THAT SEPARATES AUTO-ORIENTED OR LAND-EXTENSIVE USES FROM AREAS THAT CAN HAVE A MORE PEDESTRIAN- OR TRANSIT-ORIENTATION

Use the land use-transportation diagram to establish a community-wide vision for land use that emphasizes transit and is organized around designated activity centers. It should orient activity centers and higher-density, pedestrian-oriented neighborhoods more to transit corridors and place auto-oriented uses closer to major vehicular routes.

- 2 ESTABLISH AN URBAN GROWTH BOUNDARY THAT FOCUSES URBAN DEVELOPMENT INSIDE THE BOUNDARY AND PRESERVES OPEN SPACE OUTSIDE

The adoption of urban growth boundaries can help define communities and focus future development towards transit service corridors, thereby helping increase transit ridership and efficiency.

LAND USE ELEMENT

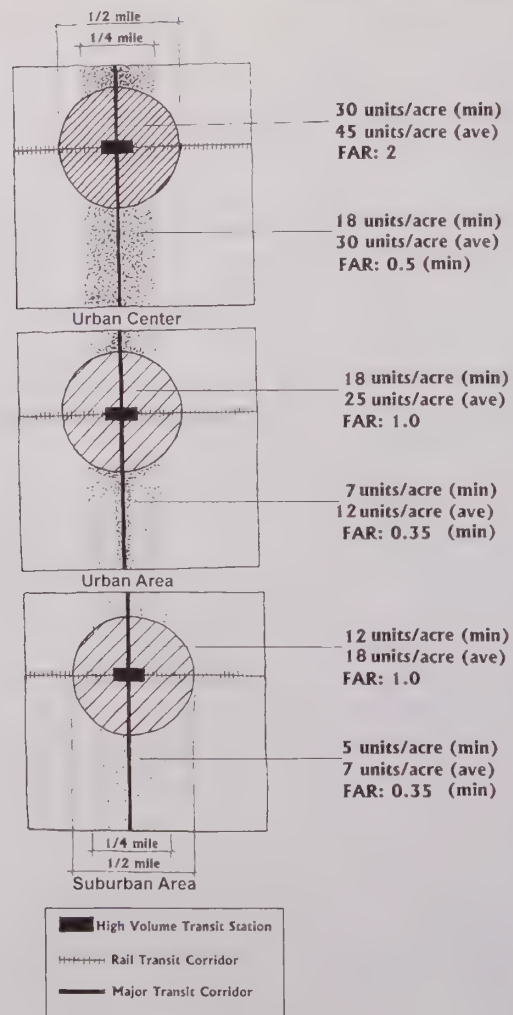
The Land Use Element establishes development areas and the range of intensity and mix of uses that will be allowed within them. The following actions would support walking, bicycling and transit.

- 3 REVISE LAND USE CATEGORIES TO INCREASE RESIDENTIAL AND EMPLOYMENT INTENSITY AND INCLUDE A GREATER MIX OF USES

Numerous studies show that increasing allowable intensity in residential and employment areas can improve transit use and make development more efficient. Similarly, an increased mix of uses can shorten trip lengths and reduce the number of trips made. The intensity and mix of uses should be increased in most urban areas, but especially near activity centers and transit stations.

The specific intensity of development and mix of uses will depend on the type and frequency of available transit service, the role of the activity center or neighborhood in the region, and the character of the surrounding community. Local residents can be involved in deciding how to incorporate this development into their communities. Visual preference surveys have found that higher densities are acceptable when well-integrated and designed to be pedestrian-

RECOMMENDED DEVELOPMENT INTENSITY



Adapted from: Metropolitan Transit Development Board, "Designing for Transit: A Manual for Integrating Public Transportation and Land Development in the San Diego Metropolitan Area". July, 1993

friendly. The accompanying sidebars outline guidelines for improving the intensity and mix of uses in communities.

- 4 ESTABLISH DESIGN GUIDELINES THAT CREATE MORE TRANSIT-SUPPORTIVE AND BICYCLE- AND PEDESTRIAN-FRIENDLY NEIGHBORHOODS, SHOPPING AREAS AND EMPLOYMENT CENTERS

Many books have identified design guidelines for

transit-supportive or pedestrian-friendly development. The Association of Bay Area Governments has prepared one such document, *Design Strategies for Encouraging Alternatives to Auto Use through Local Development Review*, and others are listed in the “Additional Resources” section of this guidebook. Local guidelines can be incorporated as an urban design element in the general plan or prepared as a separate document to be used during development review.

MIX OF USES WITHIN PEDESTRIAN-OR TRANSIT-ORIENTED AREAS

By increasing the number of uses located close together, cities and counties can reduce the distance between origins and destinations and increase the likelihood that people will walk or bicycle between them. But which uses are best to combine?

The exact mix will depend on the primary use of the area—residential, shopping, employment—and the characteristics and needs of the surrounding community.

Generally, uses that attract a lot of automobile traffic are not compatible with transit- or pedestrian-oriented areas. Uses that can serve neighborhood areas without attracting significant numbers of automobiles are more appropriate. Large retail stores—“big boxes”—should generally not be included in community-oriented areas. Some uses can be acceptable if limited in size, or as part of an integrated development.

The adjacent table outlines some examples of land use mix taken from various zoning ordinances and studies.

EXAMPLES OF USES ALLOWED IN MIXED-USE DISTRICTS

High-Density Residential Zone

High-density residential uses

Retail sales and services such as:

Florist
Gift or jewelry store
Newsstand or bookstore
Grocery
Restaurant

Personal services such as:

Barber or beauty shop
Dry cleaning pick-up station
Laundry pick-up station
Medical or dental offices
Valet Shop

Source: Montgomery County, MD

Multi-Unit Residential Area

Permitted Uses:

Multi-unit residential (minimum density 30 units per acre)

Accessory Uses:

Customary home occupations
Offices, incidental to allowed use
Accessory uses or buildings

Provisional Uses:

Local-serving retail and personal services, if part of a development of 200 or more units and less than 1,500 square feet
Public halls, lodges and clubs
Public and quasi-public uses
Retail, personal service restaurants and other neighborhood-serving uses as allowed in the Neighborhood Commercial zone

Additional uses determined by the Zoning Administrator to be supportive of those listed above

Source: Evelyn Avenue Corridor Precise Plan, Mountain View, CA

Business-Office Professional-Residential Transitional Zone

Any office or professional use

permitted in an O-P zone;

Small-scale retail and service businesses with a maximum 2,000 square foot gross floor area, such as:

- 1 Barber and beauty shops
- 2 Small retail, specialty shops
- 3 Small-scale food markets and drugstores
- 4 Use resulting from any of the following professions: executive, administrative, professional, accounting, writing, clerical, stenographic, drafting, art supplies and sales;

Residential uses located above the ground or first floor of the structure, provided such use does not exceed 35 percent of the total square footage of the building

Source: Bothell, WA

- 5 ENCOURAGE DETAILED PLANNING—THROUGH SPECIFIC, SUBAREA OR CORRIDOR PLANS—PRIOR TO THE DEVELOPMENT OF NEW AREAS OR REDEVELOPMENT OF EXISTING ONES, BOTH WITHIN TRANSIT CORRIDORS AND IN OTHER PARTS OF THE COMMUNITY

One of the best ways to ensure the successful development of pedestrian-oriented areas is to create detailed plans. These plans can coordinate the development of parcels under different ownerships, establish complementary land use patterns and design standards, ensure the adequacy and connectivity of the circulation system, and establish equitable development exactions.

TRANSPORTATION ELEMENT

The Transportation Element of the General Plan sets policies for the development, maintenance and functioning of a community's circulation system.

In crafting Transportation Elements, jurisdictions designate a system of arterial, collector and local streets, facilities that primarily serve the automobile. While communities may designate sidewalks, bikeways and trails, often these and other pedestrian-, bicycle-and transit-oriented improvements are not well-integrated.

- 6 DEFINE A DETAILED STREET NETWORK OR POLICIES AND STANDARDS FOR THE DEVELOPMENT OF NEW STREETS BEFORE LAND IS SUBDIVIDED

To make sure that a densely connected network of streets is developed, the Transportation Element should either designate general alignments for new streets to the greatest detail possible or establish policies that will achieve a highly-connected network of streets, bikeways and pedestrian pathways.

Guidebooks on community-oriented design often recommend a “grid” network of streets, reminiscent of street patterns in many early U.S. cities. New street networks should be as highly connected as those older networks, and should also create different kinds of streets, from local and shopping streets to transit streets and arterials, each with different purposes and standards.

While the level of connectivity depends on local conditions, some suggest one intersection per 300 feet of street in pedestrian-oriented neighborhoods and shopping areas. The area north of Market Street in San Francisco corresponds to this standard; highly-walkable downtown Portland, Oregon has intersections every 200 feet. Mid-block pedestrian walkways could substitute for a full intersection.

New subdivisions or developments should provide a number of street or pathway connections to adjacent properties. Gated communities and perimeter walls should be minimized. Cul-de-sacs should include pedestrian and bicycle pathways that connect the cul-de-sac directly with adjoining roadways.

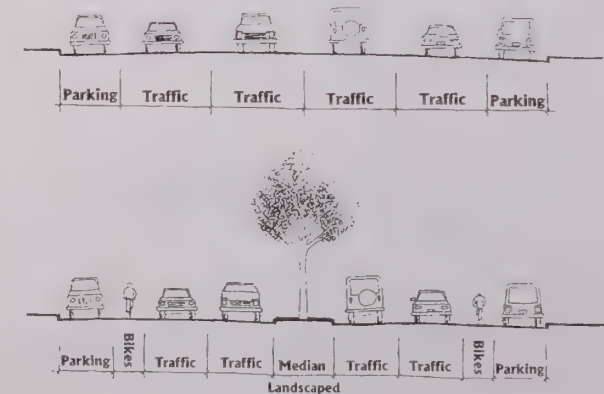
- 7 ADOPT MORE FLEXIBLE STREET STANDARDS AND FUND IMPROVEMENTS THAT ENCOURAGE PEDESTRIAN AND BICYCLE MOVEMENT AND IMPROVE THE PEDESTRIAN ENVIRONMENT

These standards and improvements include:

Keep most streets narrow. Only a few major vehicular routes need more than four lanes. Local residential streets should have only one 12-foot travel lane (for both directions) with seven-foot wide adjoining parking lanes, for a total paved width of 26 feet, if blocks are kept short.

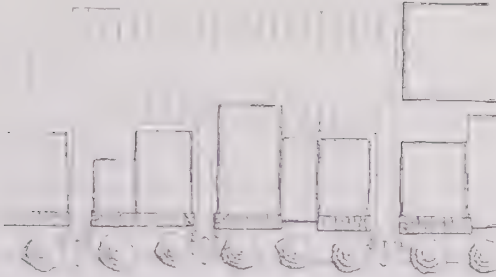
Reduce the right-of-way devoted to vehicles. Many cities have reduced four-lane streets in shopping districts to two lanes, using the newly-available right-of-way to add a median or two-way center left-turn lane or to add wider sidewalks or bike lanes.

Reduce curve radii. Many residential streets have been built with excessive curve radii. These wider curves allow faster vehicle speeds which can increase the severity of accidents and noise levels.



Reducing the width of traffic lanes can provide room for bike lanes and a landscaped median

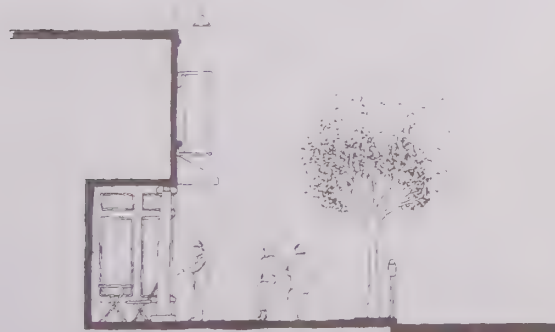
NOT THIS:



THIS



Consolidate driveways whenever possible



Spaces for: sitting window walking trees
shopping

Adequate sidewalks in shopping areas encourage both walking and window shopping and allow street trees

Improve intersections and crosswalks for pedestrians. The most dangerous place for pedestrians is where they cross vehicular paths. Shortening crosswalk distance with curb extensions, reducing sidewalk curb radii, and eliminating free right-turn lanes can make the crossings safer. Signals that allow longer crossing times in shopping districts, mid-block crossings in high-pedestrian use areas (if well-marked and traffic speeds are low) and raised crosswalks and medians also help. The use of different paving materials in crosswalks gives drivers another cue that they are crossing a pedestrian area.

Provide adequate sidewalks. Sidewalks should be provided along both sides of the street wherever possible. Sidewalk widths will vary, with five to six feet required in single-family areas and around 12 feet in commercial areas. The City of Portland requires a six foot “clear zone”—that is, an area clear of street lamps, traffic signals, and mail and newspaper boxes—in commercial areas; the Project for Public Space suggests an eight-foot sidewalk plus a 1.5-foot street buffer and two- to three-foot “window lane”, which provides an area for people to window shop without diminishing the area for through pedestrian traffic.

8 CONTROL THE AMOUNT AND LOCATION OF PARKING

Extensive parking areas that separate buildings from sidewalks and other buildings are significant impediments to a pedestrian-friendly environment. Several actions can help lessen or remove these:

Locate parking areas and driveways away from pedestrian ways. Policies should require parking lots at the rear or side of buildings. Driveways should be consolidated—and access between them areas encouraged—to limit the number of driveways that cross sidewalks. Separate parking areas that abut sidewalks with low-profile walls or well-maintained landscaping.

Reduce parking requirements. Limit off-street parking spaces per dwelling unit and reduce parking for office and commercial uses as transit service increases. Encourage shared parking programs.

Encourage on-street parking. On-street parking both meets parking demand and buffers pedestrians from moving vehicles. Counting on-street parking towards meeting parking requirements can encourage more on-street parking.

9 ENCOURAGE SLOWER TRAVEL SPEEDS WITHIN RESIDENTIAL NEIGHBORHOODS AND ACTIVITY CENTERS

Traffic calming measures that keep travel speeds at or below 20 miles per hour on local streets and 35 miles per hour on collectors and arterials will improve safety and reduce noise. While reducing pavement width is one way to reduce vehicle speeds in residential areas, there are others that should be considered where congestion or speed is a problem.

These measures include traffic circles, curb bulbs, neckdowns, gateways at the intersection of arterial and local streets, interrupted sight lines, raised medians, diagonal diverters, trees, changes in road surface and speed humps or “tables”.

In addition, the use of traffic signals can be limited and four-way stops, blinking lights, and roundabouts encouraged. Where signals are used, they should be adequately spaced and coordinated.

General plan policies should support the use of these measures when appropriate.

10 ENSURE THAT DESIGNATED “BUS TRANSIT ROUTES” SUPPORT EFFICIENT TRANSIT MOVEMENT AND SERVICE

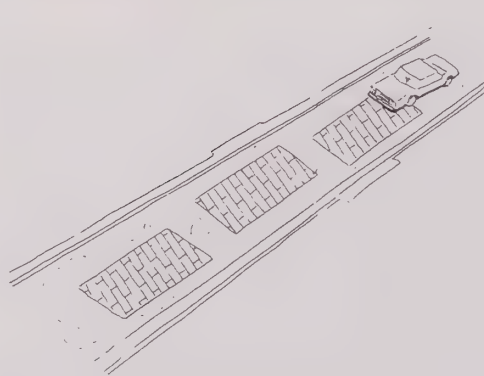
Bus transit routes should be planned to link activity centers and serve higher-density areas and, when possible, should be spaced to provide full coverage of the service area. The streets serving as transit routes should: 1) permit easy movement of transit vehicles into and out of the area without backtracking or circuitous routing, 2) minimize the number of turns required along the route, and 3) provide adequate roadway widths for use by buses. Standards, which vary from the norm on arterial or collector street standards, need to be established in consultation with transit providers.

11 IMPLEMENT TRANSPORTATION DEMAND MANAGEMENT PROGRAMS TO ENCOURAGE ALTERNATIVES TO SINGLE-OCCUPANT VEHICLES

In addition to designating the circulation system and designing transportation facilities, the transportation element should establish programs that encourage alternative travel behavior.

the supply of such housing by working with local

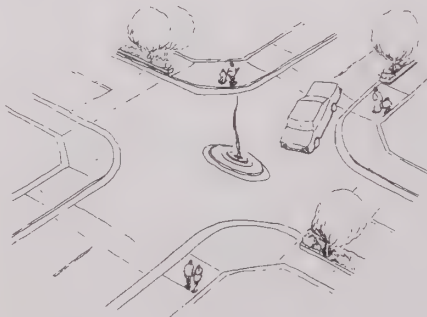
Examples of Traffic Calming Measures



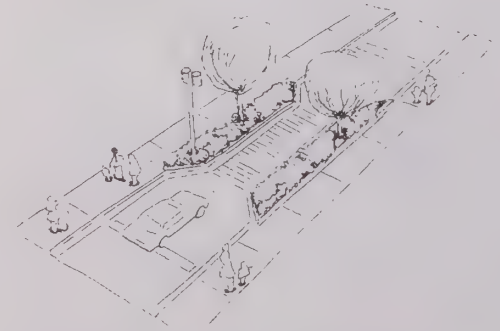
Varied Pavement



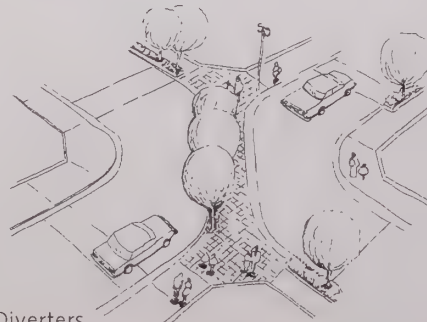
Speed humps



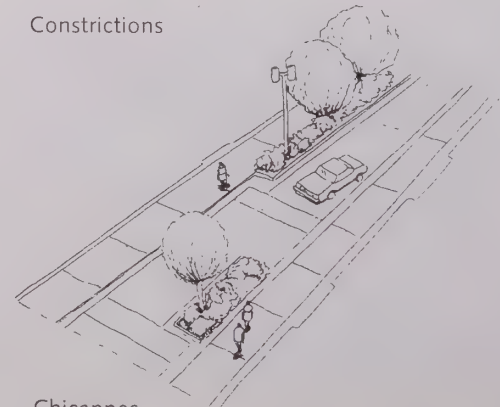
Traffic circles



Constrictions

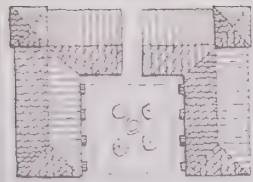


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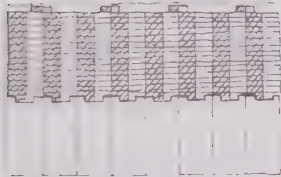


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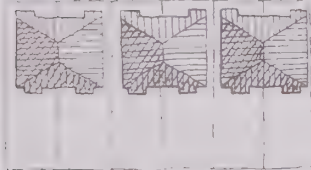
HOUSING ELEMENT



Courtyard
Apartments



Townhouses



Duplexes



Single Family
Dwelling with
second unit
over Garage

State law requires each city or county to establish policies and programs in their Housing Element to meet existing and future demand for housing within their jurisdiction. The Housing Element can be a powerful tool for creating a balanced community, one that allows more people to live, work and shop within the same community.

12 PROMOTE THE DEVELOPMENT OF HOUSING AFFORDABLE TO WORKERS EMPLOYED LOCALLY

The provision of needed housing in a community can help reduce the length and number of trips by private automobile. Local governments can help increase the supply of such housing by working with local employers to understand the needs and incomes of their workers and to ensure that sufficient land is available for the development of such housing.

13 ENCOURAGE THE DEVELOPMENT OF HOUSING FOR A RANGE OF INCOMES AND AGES AS AN INTEGRAL PART OF TRADITIONAL NEIGHBORHOOD DEVELOPMENTS

Building on policies in the Land Use Element, the Housing Element should target programs for developing housing in activity centers and traditional neighborhood developments to integrate housing for groups not well-served by the market into mixed-income and age communities.

A variety of housing types should be included within neighborhood activity centers

ZONING AND SUBDIVISION REGULATIONS

Cities and counties use development regulations as primary tools to achieve the goals and objectives in their general plan. These regulations, especially zoning and subdivision ordinances can be tailored to emphasize better coordination between land use and transportation and community-oriented design.

ZONING ORDINANCE

Zoning and subdivision ordinances establish the basic rules for the development of land within the city or county. Traditionally, many of these rules have been concerned more with automobile circulation than with providing a balanced transportation system.

14 CREATE SPECIFIC PEDESTRIAN- AND TRANSIT-ORIENTED DISTRICT REGULATIONS

*Jurisdictions could use several different approaches to incorporate community-oriented design concepts into their zoning ordinances. A jurisdiction could establish **separate zoning districts** for these areas or use **overlay districts** to apply additional standards within transit corridors. For example, The City of Portland, Oregon has created a Light Rail Transit Station overlay zone. (See following page). A **planned development district** that establishes specific community-oriented design objectives for any*

*development within it would permit more flexibility in achieving the general plan's goals. A **specific plan** could establish different zoning provisions coordinated with detailed planning for the development area. The right approach will depend on the conditions in the community and which best fits into existing zoning regulations.*

A "pedestrian neighborhood overlay district" could, for example, apply the following additional requirements:

Allowable uses. All uses allowed in the underlying zone except land extensive or auto-oriented uses.

Minimum density. Nine residential units per gross residential acre.

Mix of housing types. On sites over 10 acres, require one-third of units to be in multi-family or attached single-family structures.

Building setbacks. At least 25 percent of the structure shall be constructed to the building setback line and no minimum setback shall exceed 15 feet.

Garage location. Garages shall be set back at least 18 feet from the front lot line.

15 MODIFY USE REGULATIONS TO ALLOW A GREATER MIX OF ACTIVITIES WITHIN EXISTING DISTRICTS

Each city or county should review its use regulations to see if the list of permitted or conditionally permitted uses can be expanded within every district. Uses

MODIFIED PARKING PROVISIONS

The following zoning code language illustrates how parking requirements can be reduced or changed to incorporate community-oriented design principles.

Reducing Parking Requirements Where Transit Service is Available

The Director may reduce the number of required off-street parking spaces when one or more scheduled transit routes provide service within 660 feet of the site. The amount of the reduction shall be based on the number of scheduled transit runs between 7:00–9:00 a.m. and 4:00–6:00 p.m. each business day up to a maximum reduction as follows:

1. Four percent for each run serving land uses in the [government/business services] section and the [manufacturing] section up to a maximum of forty percent; and
2. Two percent for each run serving land uses in the [recreation/culture] section, [general services] section and the [retail/wholesale] section up to a maximum of twenty percent.

Source: King County, WA

On-Street Parking

For family dwellings, mobile home dwellings, and residential care services with ten (10) or fewer residents, on-street parking may be counted on a space-for-space basis toward the total required amount of parking up to fifty (50) percent. On-street parking is allowed for these Land Use Classes only if such parking is located on the same side of the street as the use and does not extend beyond the subject property.

Source: Tucson, AZ

MODIFIED SUBDIVISION PROVISIONS

The following subdivision code language illustrates standards that incorporate community-oriented design principles.

Allowances for Future Street Extensions

Where the subdivision or partition is adjacent to land likely to be divided in the future, streets, bicycle paths and accessways shall continue through to the boundary lines of the area under the same ownership as the subdivision or partition, where the planning or public works director determines that such continuation is necessary to provide for the orderly division of such adjacent land, or the transportation and access needs of the community.

Source: Eugene, OR

Ensuring a Continuous Network of Streets

Cul-de-sacs shall be permitted only where there is no feasible connection with an adjacent street. If cul-de-sac streets represent more than 10 percent of the total lane miles in a development, the subdivider shall be required to demonstrate that alternative internal circulation systems which would minimize use of cul-de-sacs are infeasible.

Source: Tri-Met *Planning and Design for Transit*

When necessary for public convenience or safety, the developer shall improve and dedicate to the public accessways to connect to cul-de-sac streets, to pass through oddly shaped or unusually long blocks, to provide for networks or public paths creating access to schools, parks, shopping centers, mass transportation stops or other community services.

Source: Redmond, WA

Accommodating Pedestrians and Bicyclists

Sidewalks shall be constructed along the frontage of all public streets and within and along the frontage of all new development or redevelopment.

Source: Oregon Chapter of APA

that would help reduce trip-making and would be compatible—or could be made compatible through conditions or additional design standards—within the existing district should be added. Home occupations and accessory dwelling units are two potential additions; reasonable conditions should be required to make them compatible with adjoining uses.

16 MODIFY DEVELOPMENT STANDARDS IN EXISTING DISTRICTS TO IMPROVE PEDESTRIAN ENVIRONMENT

A number of changes could be made in existing development regulations, both those for specific districts and those applying in “some or all” districts. Parking regulations are one example that could be modified to count adjacent on-street parking, allow tandem parking for second units in driveways, and expand shared parking provisions.

SUBDIVISION ORDINANCE

While subdivision ordinances were originally developed to regulate the conveyance of property, they now address the design and construction of facilities to serve the subdivision, and the preservation of natural resource areas. Subdivision design standards can be modified to incorporate transit-oriented or pedestrian-friendly design.

17 MODIFY DESIGN STANDARDS TO REQUIRE THAT CIRCULATION SYSTEMS PROVIDE TRANSIT- AND PEDESTRIAN-ORIENTED DESIGN FEATURES

Suggested changes include:

- Frequent street and pathway connections to adjoining properties.
 - Short blocks and frequent intersections.
 - Reduced pavement widths (no wider than 26 feet, including parking lanes, in lower-density residential areas and 32 feet in higher-density areas).
 - Adequate sidewalks (at least five feet wide—at least eight feet in higher-density areas).
 - Pedestrian pathways where cul-de-sacs are permitted, or alternative pedestrian routes needed.
 - Transit streets providing non-circuitous routes for transit service connecting higher-density uses.
- Subdivision standards should also discourage perimeter walls and encourage the use of alleys.

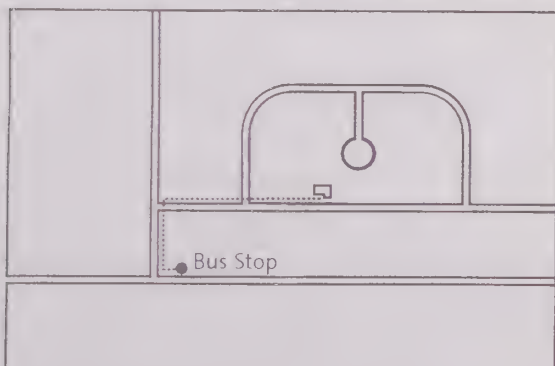
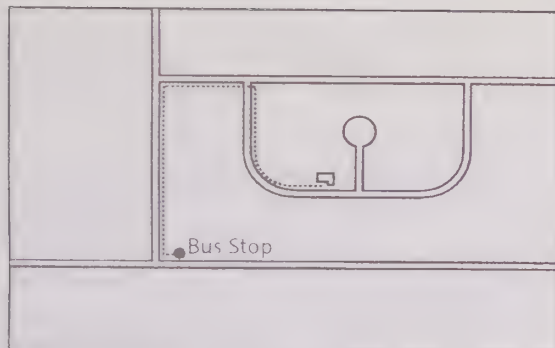
18 ENCOURAGE GREATER FLEXIBILITY IN LOT PATTERNS TO SUPPORT MORE VARIETY IN BUILDING DESIGN AND SITING, ESPECIALLY WHEN CONSISTENT WITH SPECIFIC OR DEVELOPMENT PLAN

Designers and developers have been very creative in designing subdivisions that increase density while providing an attractive residential environment. These methods include so-called “zipper” or “z-lot”, zero-lot line or duplex developments. The mixing of lots of different sizes close to each other is another way of allowing variety in housing types and mixing of incomes and ages within a coherent design. Subdivision regulations can also limit the area that could be developed with a single development type.

Development Review Checklist

The following criteria can be used to evaluate the design and site plans of developments within pedestrian- or transit-oriented districts. While the list addresses all aspects of site design, those criteria that relate specifically to pedestrian or transit orientation are marked with a ❖.

	Yes	No	Maybe	N/A		Yes	No	Maybe	N/A
Buildings and Site Planning					Parking and Circulation				
1 Architectural quality is as good or better than surroundings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1 Driveways are limited in number and combined with adjacent driveways if possible ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Building materials and colors are compatible with surroundings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 Separate, well-marked pedestrian paths are provided from sidewalks to building entrances ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Signs are scaled and oriented to pedestrians ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3 Pedestrian connections are provided to adjoining parcels where distance to sidewalk is long ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Buildings are located at lot line or oriented to sidewalks ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4 Adequately sized sidewalks are provided ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Entrances are located at lot line or visible from sidewalk ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5 Entrances are located at lot line or visible from sidewalk ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Buildings use windows or interesting materials to provide visual interest at street level ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6 Parking areas are located to rear or side of site, not at corners, with access from side streets onto corner lots ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 Lighting is placed to improve safety while minimizing impacts on adjoining uses ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7 Safe, convenient bike parking is provided ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 Loading and trash collection areas are located to side or rear of development or are well-screened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8 Loading and service areas are located to minimize traffic flow disruption	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					Landscaping				
					8 Street trees provide shade and separation ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					9 Landscaping is used to minimize the visual impacts of parking areas ❖	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Lacks adequate street connectivity or pedestrian access through the project site.



New pedestrian and bicycle paths can make walking and cycling more convenient

DEVELOPMENT REVIEW

While zoning and subdivision ordinances directly regulate many of the basic aspects of land development, cities and counties can also influence the shape of new development during project review. Building on the policies contained in their general plans, on urban design and other guidelines, and on environmental impacts identified during CEQA review, jurisdictions frequently work with proponents to modify the design of proposed projects.

URBAN DESIGN GUIDELINES

19 ADOPT A DETAILED SET OF DESIGN GUIDELINES TAILORED TO THE DIFFERENT AREAS WITHIN YOUR COMMUNITY

In addition to the guidelines for street design, the following suggestions could be applied:

Orient buildings to the street and locate them closer to the sidewalk. In some districts, require that a minimum percentage of the building facade be built out to the street right-of-way. Building entrances should be frequent and visible from sidewalks and pedestrian ways.

Encourage front porches on houses and interesting facades in commercial areas. Porches should be covered and usable, at least eight feet wide and ten feet long. Guidelines should prohibit large expanses of blank walls in commercial areas and require street-level windows or interesting facades to ensure a rich visual experience.

Locate garages away from the street. To create a pedestrian streetscape, residential garages should be located to the rear of building lots, accessed either from an alley or by a driveway to one side of the building.

Reduce the visual dominance of parking areas. Parking in commercial or employment areas should be located to the rear or side of buildings. Parking lots should not abut street intersections or terminate a major street vista.

Place buildings to create pedestrian-oriented pathways. Create a comfortable walking environment and minimize the impact of vehicular circulation on pedestrians in commercial areas by:

- limiting the number of driveways crossing sidewalks,
- locating buildings close to streets,
- providing on-site walkways that minimize distances between building entrances, and
- incorporating plazas and sitting areas.

Provide pedestrian-scale and bicycle amenities. Within commercial areas, scale signs for easy reading by pedestrians and bicyclists rather than by motorists. Use awnings and street trees to shelter pedestrians from the elements. Provide secure bicycle parking as part of commercial, retail, office, high-density residential and mixed-use developments.

CAPITAL IMPROVEMENTS AND OTHER ACTIONS

While cities and counties can use their development regulations and project review to better link private developments and transportation, they are also involved directly in providing transportation facilities and services. They construct and maintain roads, bikeways, sidewalks; provide transit service, often with transit operators; and work with special districts, federal, State, and regional agencies to fund, manage and maintain regional facilities.

Cities and counties directly affect the shape of the transportation system through the standards they establish for roadway and other transportation facilities, through the priorities they establish for project funding and through the programs they submit for State and Federal funding.

TRANSPORTATION FACILITY STANDARDS

Localities establish the basic standards for roads, bikeways, sidewalks, trails and other aspects of the local circulation system in their general plan. Many specifics, however, are found in the formal design standards used during the subdivision process and in actual project design and review.

- 23 INCORPORATE PEDESTRIAN, BICYCLE AND TRANSIT FACILITIES INTO THE DESIGN OF NEW ROADWAYS AND FUND THE INCORPORATION OF THESE FACILITIES INTO THE REDESIGN OF EXISTING ONES

The actual designs jurisdictions choose to incorporate will depend on the role of the roadway and the character of the surrounding area. A four-lane collector street could be restriped to narrow the inside lanes to 11 feet and widen the outside lanes to 13 feet to provide room for bicycles. Communities could pave the shoulders of rural roads designated as part of their bicycle system to better separate vehicles and bicycles. Where sidewalks are missing or too narrow, streets can be redesigned to add them.

- 24 FUND SHUTTLE BUSES TO CONNECT HIGH-DENSITY HOUSING OR EMPLOYMENT AREAS WITH LIGHT RAIL, BART OR CALTRAIN STATIONS

Adding shuttle buses between activity centers and transit stations can increase transit use and decrease traffic demand. Free shuttles have been used in employment centers throughout the Bay Area, encourage workers to leave their cars home and take transit. Shuttle services have been established in Walnut Creek, Berkeley and Emeryville.

SHUTTLE BUS PROGRAMS

The Cities of Walnut Creek, Berkeley and Emeryville have established shuttle buses that link BART stations with employment centers and shopping areas.

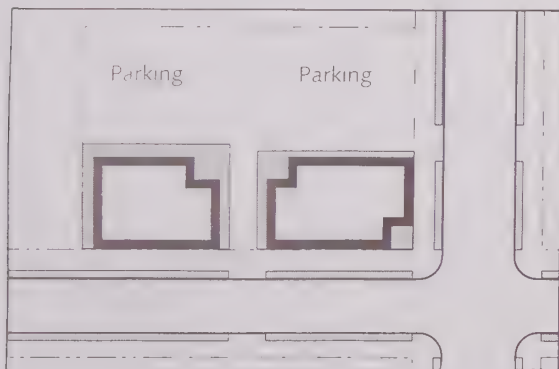
Walnut Creek's free downtown shuttle bus system, called the "**Free Ride**", is a joint venture between the local transit agency, the County Connection, and the City of Walnut Creek. It provides a free ride between the Walnut Creek BART station and downtown shopping areas. The shuttle was established during the 1980's and has continued to operate at 15 minute headways over the years.

The **Berkeley Electric Shuttle Transit (BEST)** is a two year pilot project created to connect Central Berkeley, South Berkeley, and the Ashby and North Berkeley BART Stations with five West Berkeley employment centers. It operates Monday through Friday during peak commute hours. The shuttle is coordinated with the BART schedule and hourly shift changes. During the introductory period there will be no charge for passes.

The **Emery Go-Round** is a free shuttle connecting Emeryville's employers and shopping centers with MacArthur BART station. It operates from 6:00 a.m. to 7:30 p.m. on weekdays and from 10:00 a.m. to 6:00 p.m. on Saturdays. The Emery-Go-Round is free to all riders.



Locating parking lots between buildings and sidewalks discourages walking and transit use



Placing buildings and building entrances adjacent to sidewalks reduces walking distances and improves the street environment

CEQA AND OTHER REVIEW

20 IDENTIFY AS POTENTIALLY SIGNIFICANT IN INITIAL STUDIES WHEN A PROPOSED PROJECT LACKS ADEQUATE STREET CONNECTIVITY OR THROUGH PEDESTRIAN ACCESS

In addition to the list of potentially significant environmental impacts identified in the California Environmental Quality Act (CEQA) guidelines, cities and counties frequently establish their own criteria. The checklist in the CEQA Guidelines now asks whether the proposed project would remove existing pathways. To carry out these land use-transportation principles, cities and counties could add to that criteria, identifying as potentially significant impacts when a proposed project fails to incorporate adequate pedestrian, bicycle or transit facilities.

21 ESTABLISH A CONSISTENT METHODOLOGY FOR ANALYZING TRAFFIC IMPACTS THAT REFLECTS THE EFFECTS OF REQUIRED OR PROPOSED TRANSIT AND PEDESTRIAN FEATURES

Cities and counties often require detailed traffic analysis during review of proposed projects. Such analysis should recognize that the availability of transit service, pedestrian-oriented design features and transportation demand management measures can reduce vehicle trips. Each community should modify their traffic analysis methodology accordingly.

22 REQUIRE INCORPORATION OF TRANSPORTATION DEMAND MANAGEMENT MEASURES AS PART OF PROJECT APPROVAL

Cities and counties may find, when reviewing a project, that they can, through the addition of specific features or implementation programs, reduce its impact on the local transportation system. These features could include the provision of bicycle parking or on-site showers to encourage bicycle use. Programs could include parking cash-out or subsidizing transit fares.

SUBREGIONAL COOPERATION

To be successful, some actions must be undertaken in cooperation with other localities, other agencies, or both.

28 WORK WITH TRANSIT PROVIDERS AND NEARBY JURISDICTIONS TO COORDINATE TRANSIT SERVICE WITH TRANSPORTATION IMPROVEMENTS AND LAND DEVELOPMENT

29 WORK WITH NEIGHBORING JURISDICTIONS TO COORDINATE THE DEVELOPMENT OF A DENSE NETWORK OF PEDESTRIAN- AND TRANSIT-FRIENDLY STREETS

Where transit routes cross city limits and where developments in one city or county adjoin other jurisdictions, coordination is needed to ensure that adequate transit routes and a dense network of interconnected streets are established. This coordination should take place at several levels including the creation of interjurisdictional transportation plans, the involvement of neighboring cities or counties during the development of general plans, and consultation with those jurisdictions and other agencies, especially transit agencies, during project review.

30 WORK WITH THE LOCAL AGENCY FORMATION COMMISSION AND THE COUNTY TO ESTABLISH URBAN GROWTH BOUNDARIES

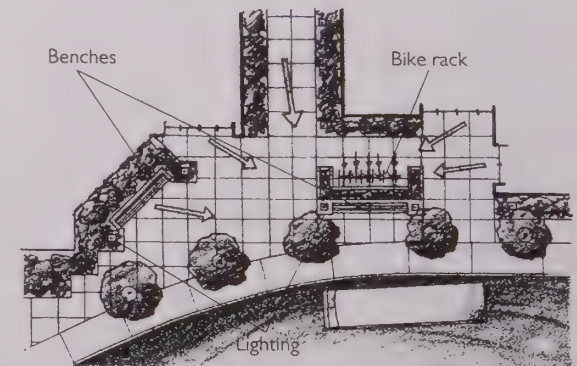
Creating more compact communities establishes a foundation for community-oriented development. This requires the cooperation and support of the cities within each county, the counties themselves, and the local agency formation commissions (LAFCOs). Each city should establish a reasonable urban growth boundary through its general plan and work with the county to ensure that those boundaries are incorporated into the county's land use planning. Finally, both cities and counties should work with the LAFCOs to ensure that annexations and urban service extensions are consistent with urban growth policies.

Potential Guideline for On-Site Pedestrian Circulation System

Pedestrian walkways shall form an on-site circulation system that minimizes the conflict between pedestrians and traffic at all points of pedestrian access to on-site parking and building entrances. Pedestrian walkways shall connect building entrances to one another and from building entrances to public street entrances and existing or planned transit stops. Pedestrian walkways shall be provided when the pedestrian access point or any parking space is more than 75 feet from the building entrance or principal on-site destination as follows:

- 1 All developments which contain more than one building shall provide walkways between the principal entrances of the buildings;
- 2 All nonresidential buildings set back more than 100 feet from the public right-of-way shall provide for direct pedestrian access from the building to buildings on adjacent lots.

Source: Proposed language for King County, WA



Bicycle facilities should be placed in areas of high surveillance.

THE LOCATION EFFICIENT MORTGAGE

In areas with a greater mix of uses and greater access to transit, households tend to spend less on automobile travel. With less income needed to support a car, households can afford to buy a higher priced home in a "location efficient" neighborhood rather than being forced to buy where they must commute greater distances.

A study by the Natural Resources Defense Council found that an average household in northeast San Francisco will spend \$1,130 less per month than a household in Danville/San Ramon. When applied to a standard mortgage calculation, this difference translates to \$50,000 more in borrowing power.

The location efficient mortgage can encourage moderate-income families to purchase homes in urban communities, increase public transit ridership, and support the redevelopment of urban neighborhoods.

For more information, contact Donna Liu at the Natural Resources Defense Council [415.777.0200].



Provide public spaces on streets, particularly near transit stops

25 CREATE NEW PEDESTRIAN OR BICYCLE PATHWAYS TO SHORTEN DISTANCES TO ACTIVITY CENTERS

Many older subdivisions in the Bay Area and other American cities provided pedestrian walkways where steep hills kept street intersections far apart. These mid-block paths provided shorter more direct routes to activity centers.

Communities can sometimes add similar walkways in commercial areas to provide more convenient access for residents of adjoining developments.

OTHER LOCAL ACTIONS

Jurisdictions can help carry out these policies through the administration and staffing of implementation activities.

26 ASSIGN STAFF TO PROMOTE PEDESTRIAN AND BICYCLE IMPROVEMENTS, DEVELOP PARKING STRATEGIES AND ADMINISTER TRANSPORTATION DEMAND MANAGEMENT STRATEGIES

Follow-through is one of the most important tools for carrying out these principles. Especially in areas where no specific or redevelopment plan has been prepared and where community-wide policies prevail, giving the responsibility for oversight to designated staff can better ensure that these policies have the advocates necessary to implement them.

27 USE GOVERNMENTAL PROGRAMS TO ENCOURAGE DEVELOPMENT OF COMMUNITY-ORIENTED ACTIVITY CENTERS

Local governments can use their powers to help finance or reduce the costs of developing within designated activity centers. Some of these tools include:

***ISTEA funds** which were used to help develop the Fruitvale BART station area plan.*

***Redevelopment areas** which can help generate and direct funds for higher-density development around transit stations and within pedestrian-oriented precincts. While often thought to be effective only in large cities, this approach has been successful in small communities as well. The City of El Cerrito used redevelopment tools in developing the del Norte Place Project. Suisun City used redevelopment to add housing and revitalize its downtown area.*

***Special assessment districts** can help fund business district improvements that enhance the attractiveness and pedestrian-orientation.*

***Streamline project review and approval** where projects are consistent with a community-oriented specific plan.*

***Subsidize marketing and research** to reduce private costs and improve the chances of success for community-oriented plans.*

***Work with banks and other financial institutions** to encourage higher-density, mixed-use neighborhoods and activity centers, including incentives such as the location efficient mortgage.*

The San Antonio Station Precise Plan, Mountain View

Like the City of San José, Mountain View has prepared a number of specific plans to encourage supportive development around transit stations. The San Antonio Station Precise Plan was prepared both to direct residential and commercial development around the station and to encourage the redevelopment of older, obsolete commercial uses.

One of the projects developed consistent with the precise plan is “The Crossings”. This 18-acre

mixed-use project has established a new pedestrian- and transit-supportive neighborhood within the city. The Crossings contains 540 housing units, at a density of 30 units per net acre, and 523,000 square feet of retail, including a 42,000 square-foot supermarket. Residential parking is located to the rear of or under housing all houses include front porches while streets are only 28-feet wide. The project includes a variety of housing types—townhouses, apartments and single-family detached. Fifteen percent of the units are affordable. Three parks and a daycare center are nearby.



The Crossings, a transit-oriented development in Mountain View, CA, implements the San Antonio Station Precise Plan through a combination of residential, commercial and public uses in a pedestrian-friendly design

DOWNTOWN REDEVELOPMENT

Suisun City

With a distressed, older downtown, Suisun City was losing out to newer commercial areas. In the last several years, the community has pulled together to rebuild its downtown as a mixed-use center. The City used its redevelopment powers and created both a physical plan and programs for bringing new life to this important center. The design included new or improved pedestrian connections between downtown and surrounding areas including, importantly, the construction of the new City Hall as a catalyst and focal point for new development. The rehabilitation of housing in the adjoining neighborhoods was another key action. New live-work spaces within the downtown also contribute to the increased livability of this area.

Local Successes and Examples

This section describes just a few of the many projects that local governments in the Bay Area have helped implement. These projects indicate the range of actions that local governments can take, from “proactive” specific plans to specific developments, and represent a variety of communities throughout the region.

SPECIFIC PLANNING

Local governments can better ensure that they achieve their goals by employing specific or sub-area plans when planning for the detailed development of new or revitalized neighborhoods. These plans can establish the specific mix of uses and building types, roadway alignments and design, and necessary public facilities and amenities needed to make the neighborhood a success. While planning neighborhoods specifically for pedestrian- or transit-orientation is relatively new, several Bay Area examples exist.

Midtown Specific Plan, San José

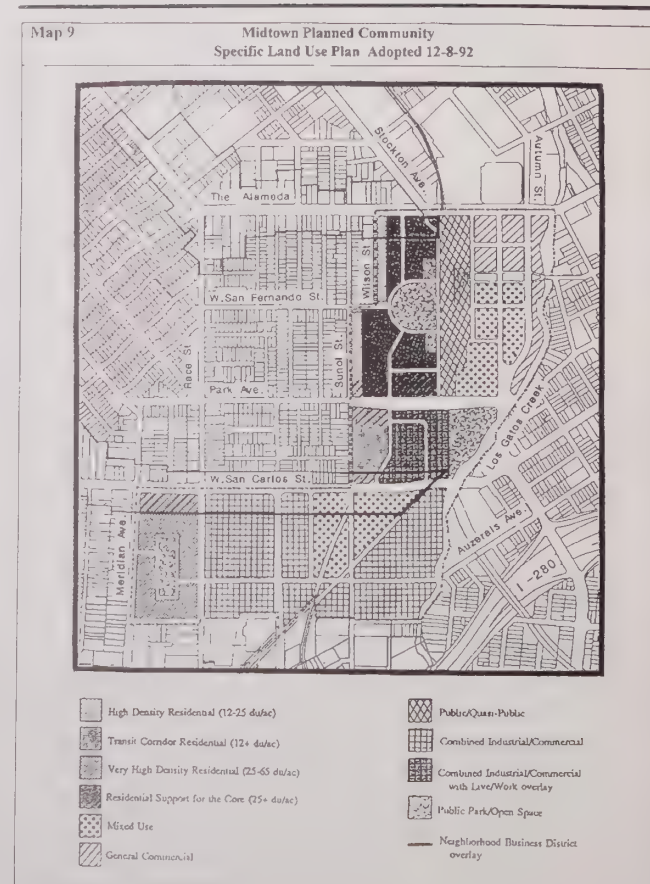
The Midtown Specific Plan is one of several transit-supportive specific plans that the City of San José has prepared. While Midtown has been incor-

porated into the General Plan as a Planned Community, the Specific Plan contains additional design guidelines and policies for development within the area. The plan’s objectives include:

- A pattern of development that reinforces transit.
- Diverse housing opportunities that establish livable neighborhoods.
- Viable industrial and commercial service uses.
- An extensive system of pedestrian ways and open space.
- Circulation facilities balanced by livability considerations.
- Complementary extensions of adjacent residential and commercial areas.

The plan for the 210-acre Midtown area will guide its transition from a primarily industrial area to a mix of high-density residential, commercial, industrial and public uses. The plan provides for the development of nearly 3,000 residential units, 920,000 square feet of office space, 335,000 square feet of retail space, 305,000 square feet of new industrial space, and 13.5 acres of parks. The Plan also includes the retention of approximately 500,000 square feet of industrial space.

LAND USE DIAGRAM
Midtown Planned Community



Source: Department of City Planning and Building



Street redesign successfully decreases vehicle speeds and traffic volumes while increasing bicycle and pedestrian use

TRAFFIC CALMING

One key action local governments can take to improve the livability of their communities is to slow down cars within their neighborhoods. Even communities without fixed-rail transit facilities can make a real difference in neighborhood quality of life through some relatively straightforward changes to local street design.

Milvia Street Redesign, Berkeley

In response to the development of a major office and retail project, the City of Berkeley redesigned Milvia Street north of University Avenue to:

- reduce and divert motor traffic,
- enhance the bicycle and pedestrian environment,
- slow motorists to improve conditions for all modes.

The final design combined speed humps and shifts in the roadway. To accommodate the shifts, on-street parking alternated from one side to the other. Parking was reduced from 61 to 50 spaces and islands of landscaping were added to channelize and slow traffic.

Traffic surveys conducted found that the combination of speed humps, curved roadways and landscaping reduced vehicles on the street during the peak hour and significantly increased bicycle and pedestrian use. Vehicle speeds have been kept below 20 miles per hour. Residents are generally pleased, although cyclists complain that speed humps slow them as well as automobiles.

TRANSIT-ORIENTED DEVELOPMENTS

Local governments have encouraged the development of specific projects that take advantage of their proximity to fixed-rail transit stations. By getting more people closer to transit stations and shopping, they encourage both greater use of the transit facility investment and less use of private automobiles.

Del Norte Place, El Cerrito

Located one block from the El Cerrito del Norte BART station, del Norte Place is a four-story residential project with ground floor retail. It contains 135 housing units, at a density of 32 units per acre, with a sizable senior housing component.

The project's design includes a public bicycle and pedestrian path through the site as well as open space, a community center, and a senior health clinic for residents.

The project's proximity to BART helped rent the units and raised rental rates. The del Norte Place project was developed through the City's Redevelopment Agency.

Fruitvale BART Station, Oakland

Building on a locally-generated planning process to redevelop the Fruitvale neighborhood, the proposed redevelopment of the Fruitvale BART station area will increase the potential market for businesses in the area, provide new housing, and tie the station more closely to the surrounding community.



The Fruitvale BART Station plan will help revitalize the surrounding community and encourage greater transit use by adding housing and commercial uses and connecting the station to existing development with safe and direct pedestrian facilities

The project includes a pedestrian plaza with new commercial space connecting the BART station with the East 14th Street commercial district. Housing will be a combination of affordable and moderately-priced units.

The project will include 150 residential units, at a density of 30 units per acre, as well as 120,000 square feet of retail and 75,000 square feet of commercial space. Parking will be provided at a rate of 0.9 spaces per unit, plus spaces for retail uses.

While this book has a particular point of view, it provides much of the detail necessary to help localities incorporate these ideas into their plans, programs and regulations.

Transit-Oriented Development

Municipal Research & Services Center of Washington, Creating Transit Supportive Regulations: A Compendium of Codes, Standards & Guidelines

This document contains extracts of transit-supportive regulations from various zoning codes, subdivision ordinances and design guidelines, primarily—but not exclusively—from jurisdictions in Washington and Oregon states. The regulations cover four topics: transit- and pedestrian-friendly site design, parking, mixed-use development and supportive densities and incentives. It also contains appendices that provide more extensive examples of such regulations.

It does not, however, contain a full extract of a transit-supportive zoning district.

The Center for Livable Communities, Building Livable Communities: A Policymaker's Guide to Transit-Oriented Development

This guidebook focuses on the why and how of transit-oriented developments with an extensive list of implementation measures local governments can use and descriptions of various transit-oriented devel-

opments in California and elsewhere.

Metropolitan Transit Development Board, Designing for Transit: A Manual for Integrating Public Transportation and Land Development in the San Diego Metropolitan Area

This manual provides guidelines for ensuring that the intensity, mix and pattern of development—and the circulation network—needed for efficient transit service are created. It provides detailed design standards for accommodating buses on the street network as well as guidelines for land use mix and density.

Traffic Calming

Cynthia L. Hoyle, Traffic Calming. Planning Advisory Service report number 456

Like other PAS reports, this guide to traffic calming provides a short (26-page) summary of the reasons for traffic calming, some of the key techniques and how to implement them.

Devon County Council Engineering and Planning, Traffic Calming Guidelines

While it focuses on Devon County in England and takes its examples primarily from England and Europe, this guidebook provides more detailed examples of traffic calming measures and their effectiveness

Additional Resources

A wide variety of books, case studies, research papers and guidelines have been prepared on how to improve the connection between land use and transportation. These documents range from more academic studies on the relationship between transit service and urban form to detailed guidelines for traffic calming and improving the environment for pedestrians and bicycles.

This section provides a short list of some interesting examples of such resources. These resources were used extensively in the preparation of this handbook. Readers interested in following up on the strategies and guidelines outlined earlier in this document should seek out some of these publications as a first step in defining a program for their community. They offer a good overview of strategies and guidelines that could be used to achieve the goal of enhancing the livability and efficiency of a community. In addition, they have extensive bibliographies that lead to other useful resources.

Resource Guides

Metropolitan Transportation Commission, *Moving Toward More Community-Oriented Transportation Strategies* for the San Francisco Bay Area: A Resources Guide

This excellent annotated bibliography directs readers to an extensive list of resources that can help communities develop and refine programs for improving the land use-transportation connection.

General Guidelines

Snohomish County Transportation Authority, *Creating Transportation Choices Through Zoning*

Although this handbook does not give detailed direction for changing zoning regulations, it does illustrate how transit-oriented development concepts can be applied to different development types, from lower-density housing to office and industrial areas. Illustrations of each type make this handbook a good introduction to these concepts.

Reid Ewing, *Best Development Practices*

Although focused on Florida, this guidebook outlines a number of development practices that could be used in California cities. It covers the full range of development issues—from land use and transportation to environmental protection and housing—describing a number of practices that are useful in implementing successful community-oriented design.

Peter Calthorpe, *The Next American Metropolis: Ecology, Community and the American Dream*

Written by the architect responsible for several transit-oriented developments, including Laguna West outside of Sacramento, this book outlines ideas for building a new kind of city in America. The guideline section, written with Shelley Poticha, covers the full range of design and development issues faced in creating this new urban model, from organizing development around regional transit routes to landscaping in parking areas.

Middlesex Somerset Mercer Regional Council, The
Impact of Various Land Use Strategies on Suburban
Mobility

This publication reports on a study of “the interaction between land use trends and regional traffic conditions”. It compared forecast development trends and patterns with alternative models that emphasized transit and walking, using traffic modeling of forecast development in the fast growing region between New Brunswick and Trenton, New Jersey. The modeling found that this alternative development approach could reduce travel demand significantly. Only one of the three model constructs was transit-oriented. The other two tried to emphasize shorter drives and walking instead.

than does the PAS report. While readers will have to convert from the metric system, this guidebook does give more specifications and provides detailed site maps of areas where traffic calming has successfully been applied.

Wolfgang S. Homburger, et al., Residential Street Design and Traffic Control

This Institute of Transportation Engineers report provides, among other things, another good description of traffic calming and alternative residential street designs that are focused more on the United States. It presents a broader and more detailed discussion of these alternatives than does the PAS report.

Pedestrian and Bicycle Improvements

Washington State Energy Office, Municipal Strategies to Increase Pedestrian Travel

This handbook focuses on ways local governments can improve the pedestrian environment—and why they should do so. Improvements listed in this guidebook include changes to the public right-of-way and building and site design.

Federal Highway Administration, The National Bicycling and Walking Study

This publication outlines the current state of walking and bicycling in the United States and the potential for increasing the use of these ways of getting around. It outlines action plans at the federal, State and local levels, including descriptions of successful local programs. It does not, however, describe development guidelines in detail.

Research Documents

Transportation Research Board, TCRP Report 16: Transit and Urban Form

While the focus of this report is to analyze the effects of transit service and urban form on each other, it does provide some guidelines for densities and case studies of successful regional transit programs, both in the United States (Washington, D.C. and Houston, Texas) and internationally (Vancouver, Canada and Curitiba, Brazil). The primary authors and researchers were Robert Cervero of the University of California, Berkeley and Sam Seskin of Parsons Brinckerhoff Quade & Douglas. Both of these authors have written or been involved in a number of other significant research efforts on transportation and urban form. Cervero authored Suburban Gridlock and other books and articles; Seskin was the principal researcher on the LUTRAQ study in Portland Oregon.

STRATEGIES AND AVAILABLE ACTIONS	Actions Appropriate to Apply In:				Notes
	Urban Centers	Urban Neigh- borhoods	Existing Suburbs	Growing Suburbs	
Compact and Balanced Communities					
• Establish urban growth boundaries around existing communities	✕	✕	✕	✕	Requires coordination with other cities
• Encourage the development of housing targeted to the incomes and needs of workers within the community	✕		✕	✕	A better match between incomes and housing prices can reduce commute lengths
• Identify transit corridors and activity centers and separate auto-dependent uses from them	✕	✕	✕	✕	Identifying transit corridors before development improves chances that land uses can be served by transit when it becomes available
• Require specific plans to ensure coordinated planning for the development of activity centers	✕	✕	✕	✕	Cost recovery for this type of proactive planning is permitted under State law
Greater Mix and Intensity of Land Uses					
• Increase the density of housing and employment especially in activity centers	✕	✕	✕	✕	Moderate increases, coupled with effective design, are most effective
• Increase the mix of uses within communities: <ul style="list-style-type: none">• allowing a broader range of uses within zoning districts• encourage more on-site services (day care, dry cleaning, cafes, etc.) within employment centers and office parks	✕	✕	✕	✕	Increased density and mix of uses are essential to pedestrian-friendly development
• Add housing within walking distance of employment areas	✕	✕	✕	✕	Target housing to match wages of workers
• Encourage infill and intensification: <ul style="list-style-type: none">• second units• sale of air rights over public lands• redevelopment of vacant or underutilized lands	✕	✕	✕	✕	
• Direct civic uses to and create public spaces in community activity centers	✕	✕	✕	✕	Civic uses can be a catalyst for private development
• Discourage auto-oriented uses in pedestrian- and transit-oriented areas					

Table of Actions

The following table lists the actions first identified in the Strategies section and identifies where they can be appropriately applied. The majority of these actions can be applied in most communities, including major urban centers, well-established urban neighborhoods, existing suburban areas and growing suburban areas. Small towns can incorporate many of these

design standards to further enhance their pedestrian character.

The notes in the table provide further comments on why, how and where to undertake these actions, especially where they require coordination with other jurisdictions or advocacy at the State or federal level.

STRATEGIES AND AVAILABLE ACTIONS	Actions Appropriate to Apply In:				Notes
	Urban Centers	Urban Neighborhood	Existing Suburbs	Growing Suburbs	
Pedestrian-Friendly Development Standards					
<ul style="list-style-type: none">Orient buildings and entrances to the pedestrian network by:<ul style="list-style-type: none">encouraging visually interesting building facadesencouraging frequent building entrancesencouraging front porchesreduce setbacks for both commercial and residential buildings	x	x	x	x	Specific plans can help coordinate parking development or working with existing business groups
<ul style="list-style-type: none">Locate parking areas to the rear or, if screened, to the side of buildings	x	x	x	x	
<ul style="list-style-type: none">Coordinate and connect adjoining parking areas	x	x	x	x	
<ul style="list-style-type: none">Limit driveways crossing pedestrian paths	x	x	x	x	
<ul style="list-style-type: none">Locate residential garages to the rear or side of lot	x	x	x	x	Especially useful on moderate vehicle but higher pedestrian volume streets
<ul style="list-style-type: none">Provide pedestrian amenities (benches, awnings, kiosks, etc.)	x	x	x	x	
<ul style="list-style-type: none">Provide street trees along roadways and to help mark pedestrian paths through parking lots	x	x	x	x	
<ul style="list-style-type: none">Use on-street parking to help separate pedestrians from moving vehicles	x	x	x	x	
<ul style="list-style-type: none">Provide adequate lighting and visual surveillance	x	x	x	x	
Incentives to Reduce Driving					
<ul style="list-style-type: none">Limit the amount of parking allowed; encourage shared parking	x	x	x	x	Changes in zoning regulations can help
<ul style="list-style-type: none">Reduce parking subsidies through cash-out programs; increase parking fees	x	x	x	x	
<ul style="list-style-type: none">Allow bicycles on buses and rail transit	x	x	x	x	
<ul style="list-style-type: none">Require bicycle-friendly facilities (bike parking, on-site showers)	x	x	x	x	
<ul style="list-style-type: none">Include bicycle and pedestrian facilities in street design and reconstruction	x	x	x	x	
<ul style="list-style-type: none">Establish shuttles to connect employment and shopping areas to fixed-rail transit stations	x	x	x		
<ul style="list-style-type: none">Assign local staff to manage programs that promote walking, bicycling and transit use city-wide	x	x	x	x	
<ul style="list-style-type: none">Conduct public outreach or awareness programs to encourage greater use of alternative travel modes, and involve citizens in applying new development principles	x	x	x	x	

STRATEGIES AND AVAILABLE ACTIONS	Actions Appropriate to Apply In:				Notes
	Urban Centers	Urban Neighborhood	Existing Suburbs	Growing Suburbs	
Integrated Transportation Network					
<ul style="list-style-type: none">Plan and implement a dense, interconnected network of streets and pathways:<ul style="list-style-type: none">connect to key core siteshave short, regularly-spaced blocks and frequent intersectionslimit the use of cul-de-sacsprovide direct bus access to potential riders and key sites	x	x	x	x	General Plans can outline potential alignments for collector streets as well as arterials and provide standards for connectivity and spacing of local streets
<ul style="list-style-type: none">Keep vehicle speeds low and improve safety through:<ul style="list-style-type: none">traffic calming techniquesnarrow vehicle waysreduced turning radiireduced "optical width" of streetreduced intersection widthmore frequent, better marked mid-block crossingswider, frequent sidewalkswider inside lanes for bicyclistseliminate free right-turn lanes where pedestrian use is high	x	x	x	x	The techniques used will depend on the character of the area being planned for: shopping and employment areas will require different approaches than more residential areas
<ul style="list-style-type: none">Provide a dense pedestrian network that:<ul style="list-style-type: none">Includes mid-block passageways where blocks are longProvides shortcuts and alternatives along high-volume roadsIncludes clear, direct pedestrian paths through parking areas	x	x	x	x	Developing an adequate pedestrian system should be a consideration in both street design and site plan review
<ul style="list-style-type: none">Establish transit routes that are located to serve and link activity centers with transit priority, direct routing and few turns	x	x	x	x	Transit routes work best on collector or arterial streets that emphasize bus movement
<ul style="list-style-type: none">Limit freeway expansion, particularly where expansion would compete with regional transit corridors	x	x	x	x	Where sub-regions have designated important transit routes, expansions of freeway capacity can work against the investments in transit facilities

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